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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,238	06/09/2006	Daisuke Kanenari	21713-00031-US1	1668

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EXAMINER	
BUIE-HATCHER, NICOLE M	

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1796	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/582,238	KANENARI ET AL.	
	Examiner	Art Unit	
	NICOLE M. BUIE-HATCHER	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 April 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-14,19 and 22-29* is/are pending in the application.

4a) Of the above claim(s) *7,14,22 and 27-29* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,8-13,19 and 23-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

The amendment filed 04/14/2010 has been entered. Claims 1-3, 5-14, 19, and 23-26 remain pending. Claims 7, 14, 22, and 27-29 were previously withdrawn.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raines et al. (US 5,017,630) in view of JP 11-292978 A (see machine translation for citation) and Weiler (US 6,727,323 B2).

Regarding claims 1-3 and 5, Raines et al. discloses an aqueous dispersion of silicon dioxide is mixed with an emulsion latex polymer and subsequently, the mixture is spray dried (Abstract, C2/L21-40). The emulsion latex polymer includes natural rubber (C3/L36-44). Coagulation techniques are not used in the spray drying step (C8/L45-C9/L28).

However, Raines et al. does not disclose spray drying under an atmosphere of a shock wave generated from pulse combustion. JP '978 teaches pulse shock wave dryer of a resin powder in claim 1. JP'978 teaches the temperature is from 40-80 °C. Raines et al. and JP '978 are analogous art concerned with the same field of endeavor, namely rubber crumbs with non-tackiness which may be prepared by spray drying. It would have been obvious to one of ordinary skill in the art at the time of invention to substitute the method of spray drying of Raines et al. with the method as taught by JP '978, and the motivation to do so would have been as JP '978 suggests thermal energy is low temperature compared with conventional spray drying method and desiccation and powdering of the rubber is efficient [0011].

However, Raines et al. does not disclose the viscosity of the polymer composition before spray drying. Weiler teaches the viscosity of an atomizing feed is less than 500 mPa·s and more preferably less than 250 mPa·s (C6/L33-38). Raines et al. and Weiler are concerned with a similar technical difficulty, namely spray-drying aqueous polymer dispersions. It would have been obvious to one of ordinary skill in the art at the time of invention to use viscosity taught by Weiler for the aqueous dispersion of Raines et al., and the motivation to do so would have been the viscosity range is a suitable range with a similar device. Therefore, the work or heat efficiency of the production of the polymer from the latex thereof containing the filler would be inherently improved, absent objective evidence to the contrary.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Raines et al. (US 5,017,630) in view of JP 11-292978 A (see machine translation for citation) and Weiler (US 6,727,323 B2) as applied to claim 1 above, and further in view of Chandran et al. (US 5,842,289).

Regarding claim 6, modified Raines et al. discloses a method as shown above in claim 1.

However, modified Raines et al. does not disclose frequency of pulse combustion. Chandran et al. teaches a frequency of pulse combustion in a range of from about 50 to about 500 Hz (C3/L12-19). Raines et al. and Chandran et al. are concerned with the same technical difficulty, namely spray drying. It would have been obvious to one of ordinary skill in the art at the time of invention to try to use the frequency as taught by Chandran et al. in a process of modified Yamawaki which is a suitable range with a similar device.

Claims 8-10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raines et al. (US 5,017,630) in view of Berg et al. (US 3,945,978) and JP 11-292978 A (see machine translation for citation).

Regarding claims 8-10, Raines et al. discloses an aqueous dispersion of silicon dioxide is mixed with an emulsion latex polymer and subsequently, the mixture is spray dried (Abstract, C2/L21-40). The emulsion latex polymer includes natural rubber (C3/L36-44). Coagulation techniques are not used in the spray drying step (C8/L45-C9/L28). Other conventional emulsion latex additives may be added (C7/L32-43).

However, Raines et al. does not disclose carbon black as filler. Berg et al. teaches carbon black in rubber filled mixtures wherein the amount of carbon black is from 40-500% by weight

of solid rubber which significantly overlaps the claimed range (C3/L57-C4/L5). Raines et al. and Berg et al. are analogous art concerned with the same field of endeavor, namely free-flowing rubber-filled mixtures which may be spray-dried. It would have been obvious to one of ordinary skill in the art at the time of invention to add carbon black per the teachings of Berg et al. in the process of Raines et al., and the motivation to do so would have been as Berg et al. suggests producing tack-free filler particles (C3/L10-14).

However, Raines et al. does not disclose the amount of surfactant. As shown above Berg teaches the amount of carbon black is from 40-500% by weight based on the solid rubber (C3/L57-C4/L5). The emulsifiers are used in quantities of 0.05 – 2% by weight based on the rubber solution (C5/L5-10). In Examples 1 and 2, a 10% solution of the rubber is used. (Therefore the amount of the emulsifier based upon the weight of carbon black is from 0.5-20% by weight which significantly overlaps the claimed range). Berg et al. further teaches the fillers are dispersed in water in the presence of the emulsifiers before adding to the rubber latex (C4/L42-44). The emulsifiers are amine surfactants (C4/L56-C5/L4). It would have been obvious to one of ordinary skill in the art at the time of invention to add the surfactant of Berg et al. in the method of Yamawaki et al., and the motivation to do so would have been as Berg et al. suggests improve storage properties (C3/L19-21).

However, Raines et al. does not disclose spray drying under an atmosphere of a shock wave generated from pulse combustion. JP '978 teaches pulse shock wave dryer of a resin powder in claim 1. JP'978 teaches the temperature is from 40-80 °C. Raines et al. and JP '978 are analogous art concerned with the same field of endeavor, namely rubber crumbs with non-tackiness which may be prepared by spray drying. It would have been obvious to one of

ordinary skill in the art at the time of invention to substitute the method of spray drying of Raines et al. with the method as taught by JP '978, and the motivation to do so would have been as JP '978 suggests thermal energy is low temperature compared with conventional spray drying method and desiccation and powdering of the rubber is efficient [0011].

Regarding claim 13, Raines et al. discloses antioxidants may be added (C7/L32-42).

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Raines et al. (US 5,017,630) in view of Berg et al. (US 3,945,978) and JP 11-292978 A (see machine translation for citation) as applied to claim 10 above, and further in view of Weiler (US 6,727,323 B2).

Regarding claim 11, modified Raines et al. discloses a process as shown above in claim 10.

However, Raines et al. does not disclose the viscosity of the polymer composition before spray drying. Weiler teaches the viscosity of an atomizing feed is less than 500 mPa·s and more preferably less than 250 mPa·s (C6/L33-38). Raines et al. and Weiler are concerned with a similar technical difficulty, namely spray-drying aqueous polymer dispersions. It would have been obvious to one of ordinary skill in the art at the time of invention to use viscosity taught by Weiler for the aqueous dispersion of Raines et al., and the motivation to do so would have been the viscosity range is a suitable range with a similar device. Therefore, the work or heat efficiency of the production of the polymer from the latex thereof containing the filler would be inherently improved, absent objective evidence to the contrary.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Raines et al. (US 5,017,630) in view of Berg et al. (US 3,945,978) and JP 11-292978 A (see machine translation for citation)as applied to claim 8 above, and further in view of Chandran et al. (US 5,842,289).

Regarding claim 12, modified Raines et al. discloses a method as shown above in claim 8.

However, modified Raines et al. does not disclose frequency of pulse combustion. Chandran et al. teaches a frequency of pulse combustion in a range of from about 50 to about 500 Hz (C3/L12-19). Raines et al. and Chandran et al. are concerned with the same technical difficulty, namely spray drying. It would have been obvious to one of ordinary skill in the art at the time of invention to try to use the frequency as taught by Chandran et al. in a process of modified Yamawaki which is a suitable range with a similar device.

Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raines et al. (US 5,017,630) in view of in view of Berg et al. (US 3,945,978) and JP 11-292978 A (see machine translation for citation).

Regarding claim 23, Raines et al. discloses an aqueous dispersion of silicon dioxide is mixed with an emulsion latex polymer and subsequently, the mixture is spray dried (Abstract, C2/L21-40). The emulsion latex polymer includes natural rubber (C3/L36-44). Coagulation techniques are not used in the spray drying step (C8/L45-C9/L28). Other conventional emulsion latex additives may be added (C7/L32-43).

However, Raines et al. does not disclose carbon black as filler. Berg et al. teaches the fillers including carbon black is dispersed in water and are intimately mixed with aqueous

emulsions of the elastomer (C3/L27-47). Raines et al. and Berg et al. are analogous art concerned with -the same field of endeavor, namely free-flowing rubber-filled mixtures which may be spray-dried. It would have been obvious to one of ordinary skill in the art at the time of invention to add carbon black per the teachings of Berg et al. in the process of Raines et al., and the motivation to do so would have been as Berg et al. suggests producing tack-free filler particles (C3/L10-14) and a continuous processing technique is economical (C1/L28-42).

However, Raines et al. does not disclose spray drying under an atmosphere of a shock wave generated from pulse combustion. JP '978 teaches pulse shock wave dryer of a resin powder in claim 1. JP'978 teaches the temperature is from 40-80 °C. Raines et al. and JP '978 are analogous art concerned with the same field of endeavor, namely rubber crumbs with non-tackiness which may be prepared by spray drying. It would have been obvious to one of ordinary skill in the art at the time of invention to substitute the method of spray drying of Raines et al. with the method as taught by JP '978, and the motivation to do so would have been as JP '978 suggests thermal energy is low temperature compared with conventional spray drying method and desiccation and powdering of the rubber is efficient [0011].

Regarding claim 24, Raines et al. does not disclose the time after mixing the rubber mixture and then drying. Additionally, Berg et al. teaches the residence time of the mixture to be precipitated is from 5 to 60 seconds which overlaps the claimed range (C6/L53-C7/L5). It would have been obvious to one of ordinary skill in the art at the time of invention to use the time as taught by Berg et al. in the process of Yamawaki et al., and the motivation to do so would have been as Berg et al. suggests to evaporate the solvent.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Raines et al. (US 5,017,630) in view of Berg et al. (US 3,945,978) and JP 11-292978 A (see machine translation for citation) as applied to claim 23 above, and further in view of Weiler (US 6,727,323 B2).

Regarding claim 25, modified Raines et al. discloses a process as shown above in claim 23.

However, Raines et al. does not disclose the viscosity of the polymer composition before spray drying. Weiler teaches the viscosity of an atomizing feed is less than 500 mPa·s and more preferably less than 250 mPa·s (C6/L33-38). Raines et al. and Weiler are concerned with a similar technical difficulty, namely spray-drying aqueous polymer dispersions. It would have been obvious to one of ordinary skill in the art at the time of invention to use viscosity taught by Weiler for the aqueous dispersion of Raines et al., and the motivation to do so would have been the viscosity range is a suitable range with a similar device. Therefore, the work or heat efficiency of the production of the polymer from the latex thereof containing the filler would be inherently improved, absent objective evidence to the contrary.

Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Raines et al. (US 5,017,630) in view of Berg et al. (US 3,945,978) and JP 11-292978 A (see machine translation for citation)as applied to claim 23 above, and further in view of Chandran et al. (US 5,842,289).

Regarding claim 26, modified Raines et al. discloses a method as shown above in claim 23.

However, modified Raines et al. does not disclose frequency of pulse combustion. Chandran et al. teaches a frequency of pulse combustion in a range of from about 50 to about

500 Hz (C3/L12-19). Raines et al. and Chandran et al. are concerned with the same technical difficulty, namely spray drying. It would have been obvious to one of ordinary skill in the art at the time of invention to try to use the frequency as taught by Chandran et al. in a process of modified Yamawaki which is a suitable range with a similar device.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamawaki et al. (US 4,065,426) in view of JP 11-292978 A (see machine translation for citation), Weiler (US 6,727,323 B2), and Tanaka et al. (US 5,585,459).

Regarding claim 19, Yamawaki et al. discloses natural rubber latex is added with a coagulant to obtain crumbs of the rubber (C2/L39-49). A rubber latex may be mixed with an aqueous carbon black slurry (C2/L64-C3/L4). Additionally, water-soluble polymeric materials such as polyethylenepolyamine, polyimine, polyacrylamide may be used as a coagulating assistant (C3/L21-37). In the fourth step (d), a spray dryer may be used (C5/L5-22). Since each of the components is mixed, some agitation must take place.

However, Yamawaki et al. does not disclose spray drying under an atmosphere of a shock wave generated from pulse combustion. JP '978 teaches pulse shock wave dryer of a resin powder in claim 1. JP'978 teaches the temperature is from 40-80 °C. Yamawaki et al. and JP '978 are analogous art concerned with the same field of endeavor, namely rubber crumbs with non-tackiness which may be prepared by spray drying. It would have been obvious to one of ordinary skill in the art at the time of invention to substitute the method of spray drying of Yamawaki et al. with the method as taught by JP '978, and the motivation to do so would have

been as JP '978 suggests thermal energy is low temperature compared with conventional spray drying method and desiccation and powdering of the rubber is efficient [0011].

However, Yamawaki et al. does not disclose the viscosity of the polymer composition before spray drying. Weiler teaches the viscosity of an atomizing feed is less than 500 mPa·s and more preferably less than 250 mPa·s (C6/L33-38). Yamawaki et al. and Weiler are concerned with a similar technical difficulty, namely spray-drying aqueous polymer dispersions. It would have been obvious to one of ordinary skill in the art at the time of invention to use viscosity taught by Weiler for the aqueous dispersion of Yamawaki et al., and the motivation to do so would have been the viscosity range is a suitable range with a similar device. Therefore, the work or heat efficiency of the production of the polymer from the latex thereof containing the filler would be inherently improved, absent objective evidence to the contrary.

However, Yamawaki et al. does not disclose the water-soluble polymeric materials are polyvinyl alcohol, a water-soluble cellulose derivative or a salt thereof. Tanaka et al. teaches polyvinyl alcohol, hydroxyethyl cellulose, hydroxypropyl cellulose, and methyl cellulose as coagulation assistants (C5/L46-50) in natural rubber compositions (C1/L5-9). Yamawaki et al. and Tanaka et al. are analogous art concerned with the same field of endeavor, namely coagulated natural rubber particles using coagulation assistants. It would have been obvious to one of ordinary skill in the art at the time of invention to substitute the coagulation assistants per the teachings of Yamawaki et al. with the coagulation assistants per the teachings of Tanaka et al., and the motivation to do so would have been as both the coagulation assistants of Yamawaki et al. and coagulation assistants per the teachings of Tanaka et al. are both used in the coagulation of natural rubber in combination with an acid.

Response to Arguments

Applicant's arguments with respect to claims 1-3, 5, 6, 8-13, and 23-26 have been considered but are moot in view of the new ground(s) of rejection. The following comment(s) apply:

A) Since Yamawaki et al. disclose a coagulant is used, the previous rejections of claims 1-3, 5, 6, 8-13, and 23-26 under 35 U.S.C. 103(a) over this reference are withdrawn.

B) Another reference, Tanaka et al. (US 5,585,459), has been added to the previous rejection of claim 19, therefore this action is non-final.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NICOLE M. BUIE-HATCHER whose telephone number is (571)270-3879. The examiner can normally be reached on Monday-Thursday with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571)272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Eashoo/
Supervisory Patent Examiner, Art Unit 1796

/N. M. B./
Examiner, Art Unit 1796
7/8/2010